5.0 MITIGATION SUMMARY

5.1 INTRODUCTION

Mitigation measures identified in this chapter summarize specific measures discussed in Chapters 2.0 and 4.0. These measures were developed in response to impacts identified during the course of this analysis and describe how project activities would be implemented to assure compliance with resource management goals identified in the Platte River Resource Area *Resource Management Plan* and the *Oil and Gas Programmatic Environmental Assessment*, applicable lease stipulations, and any additional resource limitations which may have been identified during interdisciplinary team analyses. Mitigation and monitoring measures identified herein may be modified or selectively applied by the Authorized Officer (AO) on the basis of new information or the need to further minimize impacts. In this regard, the Area Manager for the Platte River Resource Area Office, Bureau of Land Management would be the AO for this project and would be responsible for all activities associated with the additional oil/gas exploration and development activity within the CRNGDPA. Final mitigation and monitoring requirements would be determined by the AO after recommendations are received from the appropriate Resource Specialists.

5.2 ADMINISTRATIVE REQUIREMENTS

The Operator, as well as their contractors and subcontractors, would conduct operations in full compliance with all applicable Federal and State laws and regulations, and within the guidelines specified in the approved APD's, Sundry Notices, and/or Right-of-Way Grants.

2. All applicable lease stipulations would also be adhered to during the course of additional oil/gas exploration and development activity in the CRNGDPA, unless the AO approves a specific exception in writing. Exceptions would only be granted in those cases where adherence to lease stipulations is either not possible or not necessary, and the action is deemed acceptable with proper mitigation.

5.3 APPLICANT-COMMITTED ENVIRONMENTAL PROTECTION MEASURES

Following is a summary of those mitigation measures which were incorporated directly into the project design by the Operator and enumerated in Chapter 2.0.

5.3.1 Preconstruction Planning and Design Measures

1 The Operator and BLM would conduct on-site inspections of each proposed disturbance site (e.g., well sites, roads, pipelines, etc.) to develop site-specific recommendations and mitigation measures.

2. Roads required for the proposed project would be constructed in accordance with BLM Manual 9113 standards (USDI-BLM 1985b, 1991).

3. The Operator would prepare and submit individual drill site design plans to the BLM for approval prior to initiation of construction. These plans would show the layout of the well location over the existing topography, dimensions of the well pad, volumes and cross-sections of proposed cuts and/or fills, location and dimensions of reserve and flare pits, and access road design.

4. Prior to construction, the Operator would submit a Surface Use Plan or a Plan of Development for each well site, pipeline segment, and access road project. These plans would enumerate the measures and techniques to be used for erosion control, revegetation, and restoration, and would provide specific detail on project administration, time frames, responsible parties, objectives, characteristics of site pre-disturbance conditions, topsoil removal, storage and handling, runoff and erosion control, seed bed preparation, recommended seed mixtures, seed application, fertilization, mulching, site protection, weed and livestock or other herbivore control, and monitoring and maintenance.

5. The Operator would slope stake construction activities on steep and/or unstable slopes when required by the BLM, and would receive approval by the BLM prior to initiating construction.

6. The Operator would identify aggregate and other road material sources for use in drill site and road construction. The appropriate surface management agency would approve these sources, including timing for extraction, prior to use.

5.3.2 Air Quality

1 The Operator would adhere to all applicable Wyoming Ambient Air Quality Standards (WAAQS) and Regulations including those for fugitive dust suppression presented in Wyoming Air Quality Regulations on Fugitive Dust Suppression Section 14(F) (WDEQ 1995). If a fugitive dust problem is identified by the BLM as a result of this project, immediate abatement measures (e.g., applications of water or chemical dust suppressants to disturbed surfaces) would be initiated in consultation with the BLM and WDEQ to avoid exceeding ambient air quality standards.

2. The Operator would not allow open burning of garbage or refuse at well locations or other facilities in the CRNGDPA. Any other open burning would be conducted under the permitting provisions of Section 13 of the Wyoming Air Quality Standards and Regulations (WDEQ 1995).

5.3.3 Cultural Resources

1 The Operator would follow the Section 106 compliance process prior to any surface disturbing activity.

2. The Operator would halt construction activities if previously undetected cultural resource materials are discovered during construction. The BLM would be immediately notified, and consultation with the SHPO and Advisory Council would be initiated, as appropriate, to determine proper mitigation measures pursuant to 36 CFR 800.11. Construction would not resume until a Notice to Proceed is issued by the BLM.

5.3.4 Geology and Minerals

1. BLM/WOGCC casing and cementing criteria would be followed to protect all subsurface mineral and water-bearing zones.

5.3.5 Hydrology

1. Construction at drainage crossings would be limited to periods of low-or no-flow.

2. The Operator would follow all practical alternatives and designs to limit disturbance within drainage channels, including ephemeral and intermittent draws.

3. A 100-foot wide buffer area of undisturbed land would be left between construction sites and ephemeral and intermittent channels.

4. Channel crossings by pipelines would be constructed so that the pipe is buried at least 4 feet below the channel bottom.

5. Channel crossings by roads and pipelines would be constructed perpendicular to flow.

6. Disturbed channel beds would be reshaped to their approximate original configuration.

7. All reserve pits would be constructed with a minimum of one-half (1/2) the total depth of the pit below the original ground surface on the lowest point within the pit.

8. All reserve pits would be designed with a minimum of 1 foot of freeboard.

9. The discharge of all water (stormwater, produced water, etc.) would be done in conformance with WDEQ-WQD, BLM, and WOGCC rules and regulations (WDEQ 1990; BLM Onshore Oil and Gas Order No. 7).

10. The Operator would prepare SWPPPs for all disturbances as required by WDEQ NPDES permit requirements. In some instances, SWPPPs for groups of wells would be developed.

The Operator would implement SPCC Plans if liquid petroleum products or other hazardous materials are stored on-site in sufficient quantities, in accordance with 40 CFR 112.

5.3.6 Range

1 Removal or disturbance of vegetation would be kept to a minimum through construction site management (e.g., by utilizing previously disturbed areas, using existing ROW's, designating limited equipment/material storage yards and staging areas, scalping, etc.) where and as feasible.

2. The Operator would seed and stabilize disturbed areas in accordance with management direction from the appropriate surface management agency or private surface owner, as appropriate.

3. The Operator would monitor for noxious weeds and apply BLM-approved weed control techniques (e.g., soil sterilants, biological controls), as necessary with the prior written approval of the Authorized Officer, BLM.

5.3.7 Soils

1 Prior to commencement of construction activities, all available topsoil (up to a maximum of 12 inches) would be stripped from areas of cut, fill, and subsoil storage, and stockpiled for future reclamation operations.

2. The Operator would keep the area of disturbance to the minimum necessary for drilling and subsequent production activities, while providing for worker safety on site.

3. The Operator would restrict off-road vehicle activity by employees and contract workers.

4. The Operator would restrict project-related travel and reclamation activities during periods when soils are saturated and excessive rutting could occur.

5 Where feasible, the Operator would locate pipelines immediately adjacent to roads or other pipelines to avoid creating separate areas of disturbance.

6. The Operator would minimize construction activities in areas of steep slopes and apply special slope stabilizing structures and techniques (e.g., mulch, matting, etc.) if construction cannot be avoided in these areas.

7. The Operator would not conduct construction and/or reclamation activities using frozen or saturated soils, unless an adequate plan is submitted and approved by the BLM that demonstrates potential impacts would be mitigated.

8. Runoff and erosion control measures such as water bars, berms, and interceptor ditches would be installed as necessary.

9. All drainage crossing structures would be designed to carry at least a 10-year storm event, pursuant to guidelines contained in BLM Manual, Section 9113 (BLM 1985, 1991a).

10. Upon completion of drilling operations and/or production facility installation, the Operators would restore those areas disturbed in conjunction therewith to the approximate original contours.

11 The Operator would replace topsoil or suitable growth materials over all disturbed surfaces prior to reseeding.

12. The Operator would reseed all disturbed sites as soon as practical following disturbance.

5.3.8 Transportation

1 Existing roads and trails would be utilized to the greatest extent possible and upgraded as necessary to comply with BLM road construction specifications.

2. All roads not required for routine operation and maintenance of producing wells or ancillary facilities would be reclaimed as directed by the BLM, State Land Board, or private landowner. These roads would be permanently blocked, recontoured, reclaimed, and revegetated by the Operator, as would disturbed areas associated with permanently plugged and abandoned wells.

3. The Operator would comply with existing federal, state, and county requirements and restrictions to protect road networks and the traveling public.

4. Special arrangements would be made with the WDOT to transport oversize loads to the project area. Otherwise, load limits would be observed at all times to prevent damage to existing road surfaces.

5. All development activities along approved ROW's would be restricted to areas authorized in the approved ROW.

6. The Operator would be responsible for maintenance of roads in the project area and for closure of roads following production activities.

7. Where proposed roads would follow existing roads, those portions of existing roads not included in the new ROW would be reclaimed and revegetated by the Operator.

5.3.9 Wildlife

1 Reserve, workover, and evaporation/production pits potentially hazardous to wildlife would be adequately protected (e.g., fencing, netting) to prohibit wildlife access as directed by the BLM, to ensure protection of migratory birds and other wildlife.

2. USFWS and WGFD consultation and coordination would be conducted for all mitigation activities relating to raptors, and T&E species and their habitats and all permits required for movement, removal, and/or establishment of raptor nests would be obtained.

3. The Operator would implement policies designed to control poaching and littering and would notify all employees (contract and company) that conviction of a major game violation could result in disciplinary action. Contractors would be informed that any intentional poaching or littering within the CRNGDPA could result in dismissal.

4. Firearms and dogs would not be allowed on-site during working hours. The Operator has existing drug, alcohol, and firearms policies that would be internally enforced.

5.4 SUGGESTED MITIGATION MEASURES

Mitigation measures identified as a result of impact analyses in Chapter 4.0 have been summarized below by specific resource component.

5.4.1 Air Quality

The air quality impact assessment assumes that water and/or chemical dust suppressants would be applied during construction in order to achieve a 50% control efficiency (at an assumed application rate of 0.02 gallons per square yard every 4 hours) in order to minimize TSP and PM_{10} fugitive dust emissions. In addition, roads constructed on soils susceptible to wind erosion could be graveled, or dust inhibitors could be periodically used on unpaved local, collector or arterial roads which present a fugitive dust problem. The operator could also establish and enforce speed limits for all non-surfaced roads within the CRNGDPA.

5.4.2 Cultural Resources

1 Any cultural or paleontological resource (historic or prehistoric site or object or fossil) discovered by the Operator, or any person working on his behalf, on public or federal land should be immediately reported to the Authorized Officer (AO). The operator should suspend

all operations in the immediate area of the discovery until written authorization to proceed is issued by the AO. An evaluation of the discovery will be made by the AO to determine the appropriate action(s) to prevent the loss of significant cultural or scientific values. The Operator would be responsible for the cost of evaluation and any decision as to proper mitigation measures would be made by the AO after consulting with the Operator.

5.4.3 Geology and Minerals

No mitigation measures were identified for this particular resource component.

5.4.4 Hydrology

In order to minimize the potential impact(s) of additional oil/gas exploration and development activity within the CRNGDPA to both surface and subsurface waters, the following mitigation measures are recommended.

1 All drilling operations should be conducted with a lined reserve pit in order to prevent drilling water loss and potential contamination of sub-surface water aquifers in the Wind River Formation through seepage. The reserve pit should be lined with a vinyl/plastic liner having a permeability less than or equal to 1 X 10^{-7} cm/sec. The liner should be chemically compatible with all substances which may be put into the pit and should be installed so that it will not leak.

   Liners made of any man-made synthetic material should be of sufficient strength and thickness to withstand normal installation and pit use and should be installed with sufficient bedding (either straw or dirt) to cover any rocks, should overlap the pit walls, extend under the mud tanks, and be covered with dirt and/or rocks to hold it in place. No trash, scrap pipe, etc. that could puncture the liner should be disposed of in the reserve pit.

2. Emergency and/or production pits associated with oil/gas production operations should consist of either metal or fiberglass tanks rather than earthen pits. Where these tanks are installed in the ground, a leak detection system should be installed to prevent the potential migration of leaking liquid leaking hydrocarbons into the subsurface. Earthen emergency/production pits should not be allowed within the CRNGDPA.

5.4.5 Range

In order to minimize the overall impact to range resources and existing range improvements within the CRNGDPA which could result from additional oil/gas exploration and development activity therein, the following mitigation measures are recommended.

1 To ensure that infestations of noxious weeds are suitably controlled, the proponent should cooperate with the appropriate weed and pest control authority as necessary to implement an integrated pest management program which would be in compliance with all federal and state rules and regulations concerning the application of herbicides or pesticides.

2. In order to maintain the structural integrity of existing fences, wooden "H" braces should be installed on either side of the proposed fence cut and the fence properly tied off, prior to cutting the fence and installation of the required cattleguard.

3. All cattleguards should be routinely maintained for the duration of the project in order to eliminate the potential for any livestock migration to occur.

5.4.6 Soils

In order to minimize impacts to soil resources within the CRNGDPA which could result from surface disturbing activities associated with additional oil/gas exploration and development activity therein, the following mitigation measures are recommended.

1 In order to protect sensitive soils, no occupancy or other surface disturbing activity should be allowed on slopes in excess of 25%.

2. The sensitive soils identified in Table 3.7 should be avoided to the greatest extent possible. In those instances where disturbance of these soils is unavoidable, the proponent should prepare a site specific Erosion Control, Reclamation and Revegetation Plan which sets forth the construction, reclamation, and revegetation techniques to be implemented in conjunction with the proposed surface disturbing activity.

3 All available topsoil (e.g., 6 to 12 inches) should be removed (stripped) from the areas of new construction and stockpiled for future reclamation of these disturbed areas. This stored topsoil, as well as cut and fill slopes on the well pad, should be secured from erosion through mulching and temporary revegetation (hydroseeding) if reclamation is not anticipated within one (1) year following initial construction.

4. Unused areas (borrow ditch) along the proposed access road route(s) which would be denuded of existing vegetation during initial construction should be reseeded in order to re-establish vegetative cover and reduce the overall potential for erosion and off-site sedimentation.

5.4.7 Visual Resources

In order to minimize the potential impact(s) of additional oil/gas exploration and development activity within the CRNGDPA to the visual resource (viewshed), the following mitigation measures are recommended.

1. All permanent (on-site for six months or longer) above-ground structures constructed or installed on the individual well locations (including pumping units, tank batteries, etc.) should be painted a flat, non-reflective, earthtone color to match one of the standard environmental colors as determined by the Five (5) State Rocky Mountain Interagency Committee.

   Those facilities required to comply with Occupational Safety and Health Act (OSHA) rules and regulations would be excluded from this painting recommendation.

5.4.8 Wildlife

As a result of this analysis process, the following mitigation measures are recommended to minimize impacts to wildlife resulting from additional oil/gas exploration and development activity within the CRNGDPA.

1 All project workers should be instructed about the nature of raptor species that occur on the project area, potential impacts to these species, and measures that can be taken to avoid or minimize impacts. They should also be advised of federal and state regulations and laws concerning harassment and illegal kill of raptor species.

2. If above-ground power lines are installed, power pole cross arms should be configured by the owner of the power line according to specifications described in Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996 (Avian Power Line Interaction Committee) so as to eliminate the potential for raptor electrocution.

3. Seasonal restrictions of construction activities within 1/4 mile of occupied raptor nests should be applied. An occupied nest is defined as one where eggs or young are being incubated or tended. Occupied nests should be protected during the nesting period until the young have safely fledged. Normally the exclusionary time window for nesting activities extends from February 1 through July 31 for golden eagles and from March 15 through July 31 for other species. The AO may modify these dates depending on the specific circumstances surrounding individual nests.

   Seasonal restrictions should be applied as follows:

   - Any activity initiated prior to February 1 may be completely finished. This means a well may be permitted (casual uses), drilled, completed, and hooked up without restrictions unless activities on the drill site cease for 3 weeks or longer between February 1 and June 1. In the

event of such prolonged inactivity, a nest survey must be performed in the 1/4-mile radius surrounding the drill site to determine whether or not an occupied nest has been established during the period of inactivity. If an occupied nest is found, the operation must temporarily cease until the young have fledged.

- Any activity initiated between February 1 and June 1 should require a nest check either by the BLM or an Operator representative approved by the BLM within 1/4 mile; if an occupied nest is present, activity would be restricted during the critical period.

4. Casual use activities away from existing roads and facilities that are scheduled to occur between March 1 and mid-June should be coordinated with the BLM in order to minimize or avoid potential impacts to nesting raptors in the area.

   Casual uses include, but are not limited to, ground activities such as: (1) preliminary scouting of routes or sites, (2) land surveying and staking, and (3) cultural and wildlife surveys. Because casual use is generally not treated as a managed or permitted activity, there is a potential for causing impacts to nesting raptors.

5. Raptor nests that are discovered by the Operator or Operator's representatives should not be approached and should be immediately reported to the BLM. Employees should be directed not to enter buffer zones, established by the BLM to reduce stress to raptor adults or young and to prevent nest abandonment.

6. The operator should construct Artificial Nest Structures (ANSs) in those raptor territories where permanent facilities are established which would/could compromise the functionality of existing nest structures as outlined below. These new nest structures (ANSs) should be installed in areas which are farthest removed from proposed well sites and on-going human activity in order to maximize nest site alternatives within the affected territories. The operator should obtain the necessary authorizations from and coordinate the installation of ANSs with the appropriate federal and state regulatory agencies prior to the installation thereof.

   In order to mitigate impacts to those raptor nesting territories encompassing nest numbers 64/65 and 169/170, the operator should install a minimum of two ANSs per territory as outlined above. As the 1998 nesting season is already underway, these ANSs should be installed subsequent to the 1998 nesting season and prior to November 15, 1998. Pending the results of potential exploration and development activity as proposed in Table 2.1, placement of these nesting structures is tentatively recommended as follows:

   a) Ferruginous Hawk Southern Nesting Territory (nests 169 and 170)

      Place one structure in the SE¼SE¼ of Section 9, Township 35 North, Range 87 West. This particular location is between two abandoned wells (CRU #1 and CRU #4); consequently, additional exploration and development in this corner of the CRNGDPA is unlikely. The proposed ANS would be located on federal surface at a minimum of 2,000 feet from both Natrona County Road 212 and the existing access into the CRU #6.

The second ANS should be placed in the NE¼SW¼SW¼ of Section 11, Township 35 North, Range 87 West on the south side of the South Fork of the Powder River. As above, this area is removed from existing and/or currently proposed development within the CRU and the potential for future development in this corner of the CRNGDPA is considered to be remote.

b) Ferruginous Hawk Northern Nesting Territory (nests 64 and 65)

1 Nest numbers 64 and 65 are located not only in the heart of the proposed CRNGDPA but also within an extensive block of private surface (see Figure 1.4), making placement of ANSs on public lands within a reasonable radius (within the territory) of the existing nests most difficult. Consequently, it is recommended that placement of these ANSs be delayed until after the results of the 1998 drilling season are known. Once a determination of commercial productivity of these wells has been made, Intoil should arrange a meeting with BLM, USFWS, WGFD, and the private surface owners to discuss ANS placement in or adjacent to the CRNGDPA and/or possible alternatives. If for some reason the proposed ANSs can not be located within this particular nesting territory, the structures would be located in an alternate area to be provided by BLM. Conditions of Approval (COAs) would be attached to permits for wells proposed within 1/4 mile of these nests which would require that 2 ANSs be installed after the nesting season and prior to November 15, 1998 if commercial production is achieved.

c) Golden Eagle Nesting Territory (nest 192):

1 In order to mitigate potential impacts to the golden eagle nesting territory encompassing nest 192, the operator should install a minimum of two ANSs as outlined above. These ANSs should be installed only in the event that commercial production is established by Intoil within a one-half (1/2) mile radius of the existing nest structure and ongoing nesting inventories verify future use of the nest by golden eagles. As nest number 192 is also located in an area of extensive private and/or State of Wyoming surface ownership (see Figure 1.4), a meeting should be scheduled with BLM, USFWS, WGFD, and the private surface owner/grazing lessee to discuss ANS placement as soon as possible after production has been established in proximity to the subject nest. If for some reason the proposed ANSs can not be located within this particular nesting territory, the structures would be located in an alternate area to be provided by BLM. Conditions of Approval (COAs) would be attached to permits for wells proposed within 1/4 mile of these nests which would require that 2 ANSs be installed after the nesting season and prior to November 15*th* of the following year if commercial production is achieved.